THE PROCEEDINGS OF THE PHYSICAL SOCIETY

Section A

FROM JANUARY 1953 TO DECEMBER 1953

VOLUME 66

Published by
THE PHYSICAL SOCIETY
1 Lowther Gardens, Prince Consort Road,
London S.W. 7

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PROCEEDINGS AT THE MEETINGS OF THE PHYSICAL SOCIETY

SESSION 1952–53

25th September 1952

The fifty-fifth meeting of THE OPTICAL GROUP was held at the Laboratories of the British Scientific Instrument Research Association, " Sira ", Southill, Elmstead Woods, Chislehurst, Kent.

Brief descriptions were given of the work in progress of interest to the Group, followed by demonstrations.

3rd October 1952

Extraordinary General Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

Changes in the Articles of Association were necessary to bring into effect the alteration in subscription arrangements agreed upon at the Annual General Meeting held on 20th May 1952. The proposed new Articles of Association which covered these alterations were still under consideration by the Board of Trade; it was, therefore, necessary to alter the existing Articles in order to bring the new scheme into force at the beginning of 1953. The necessary changes were therefore proposed and approved.

3rd October 1952

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership : Robert Ritchie Gardner, David John Gibbons, Michael Ison Large, John Harold Morgan, Keith Morgan, Neil Anthony Porter, Robert George Ridley, Brian Booth Smith, Cecil Jacob Waddington.

The following were elected to Fellowship, the first named being transferred from Student Membership : Aaron Klug, Raymond McKennel, C. S. Rao, Robert Richmond, David Robert Scott.

The 6th (1952) Rutherford Lecture was delivered by Professor R. E. Peierls and his subject was : The atomic nucleus and its constituents.

13th October 1952

The forty-sixth meeting of THE ACOUSTICS GROUP in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Mr. W. West was in the Chair.

A lecture was given by Mr. A. T. Pickles on ' Acoustics in America '.

15th October 1952

The sixty-eighth meeting of THE COLOUR GROUP in the Lecture Theatre of the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. T. Vickerstaff was in the Chair.

The following papers were read : Central foveal colour vision, by Dr. E. N. Willmer; Colour vision in extrafoveal regions, by Mr. R. A. Weale.

16*th October* 1952

The forty-first meeting of THE LOW TEMPERATURE GROUP in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. M. Newitt was in the Chair.

A lecture entitled Gas compressors was given by Dr. A. J. Barnard.

29*th October* 1952

Science Meeting was held in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership: Klaus Dieter Bowers, Margaret Grace Brackenbury, Edward Dempsey, Jerzy Adam Dobrowolski, Patrick Matthew Forsyth, Christopher Denis Green, John Roger Leech, Malcolm J. Mitchell, Frederick Richard Morgan, Angus Neaves, Kenneth Parker, William Robert Phillips, Archie Walter Ross, Asok Kumar Som, Donald George Stevenson, Jon Pyser Tilt, Brian Graham Wilson.

The following were elected to Fellowship, the first named being transferrred from Student Membership: Frank Patrick Chappel; John Kingsman Beling, Charles John Birkett Clews, Roy Claud Faust, John Walter Faure Juritz, Carl Einar Lindholm, Henry Miles O'Bryan, Shival Yogi Tiwari, Paul Thistleton.

A lecture was given by Professor M. T. F. von Laue on: Stehende Wellen im Raumgitter der Kristalle und ihr experimentaller Nachweis.

6*th November* 1952

The fifty-sixth meeting of THE OPTICAL GROUP at the National Physical Laboratory, Teddington, Middlesex. Dr. A. C. Menzies was in the Chair.

The following papers were presented, with demonstrations: A precision spherometer, by Mr. J. W. Gates; New developments in thin films techniques, by Mr. J. S. Preston; Choice of wavelengths for refractometry, by Mr. N. J. Rumsey; Optical ray tracing using the pilot model of the automatic computing engine, by Mr. G. G. Alway. Other calculating machines were also on show.

4*th November* 1952

The forty-seventh meeting of THE ACOUSTICS GROUP at Imperial College, Imperial Institute Road, London S.W.7. Mr. W. West was in the Chair.

The subject of the meeting was The threshold of hearing, and the following papers were presented: The normal threshold of hearing and other aspects of standardization in audiometry, by Mr. R. S. Dadson; A summary of the determination of the normal threshold of hearing, by Mr. L. J. Wheeler.

5*th–7th November* 1952

THE LOW TEMPERATURE GROUP visited Holland for the purpose of inspecting low temperature plant and laboratories. The following places were visited: Kamerlingh Onnes Laboratory, Leiden; Philips Works and Physics Laboratory, Eindhoven; Dutch State Mines, Limburg.

19*th November* 1952

The forty-eighth meeting of THE ACOUSTICS GROUP with the Education Group of the Institute of Physics, at the Institute of Physics, 47 Belgrave Square, London S.W.1. Mr. W. West was in the Chair.

The subject of the meeting was the Teaching of acoustics, and speakers included Mr. E. Nightingale, Dr. E. G. Richardson, Dr. R. W. B. Stephens.

28*th November* 1952

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership: Klaus Dieter Bowers, Edward Dempsey, Chistopher Denis Green, John Roger Leech, Malcolm J. Mitchell, Frederick Richard Morgan, Angus Neaves, Kenneth Parker, Archie Walter Ross, Asok Kumar Som, Jon Pyser Tilt, Brian Graham Wilson.

The following were elected to Fellowship, the first named being transferred from Student Membership: Reginald George Harlow; Christian Henry Copley, Kathleen Lonsdale, Chandra Bhan Sharma, Tor Heuch Tønnesen.

The 29th (1952) Duddell Medal was presented to Mr. C. Waller, who afterwards gave an account of his work entitled: Some topics concerning the production and application of nuclear emulsions.

The 8th (1952) Charles Vernon Boys Prize was presented to Dr. B. Bleaney who afterwards gave a short account of his work on Paramagnetic resonance at low temperatures.

3*rd December* 1952

The sixty-ninth meeting of THE COLOUR GROUP at the Lightning Service Bureau, 2 Savoy Hill, London W.C.2. Dr. W. S. Stiles was in the Chair.

The following paper was read: The architectural use of colour in schools, by Mr. Oliver Cox, Architect to the London County Council.

4*th December* 1952

The forty-second meeting of THE LOW TEMPERATURE GROUP in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. M. Newitt was in the Chair.

A lecture entitled Has low temperature physics any practical applications? was given by Professor F. E. Simon.

4*th December* 1952

The seventh Annual General Meeting of THE LOW TEMPERATURE GROUP in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. M. Newitt was in the Chair.

The Minutes of the sixth Annual General Meeting were read and confirmed.

The Report of the Committee for 1951–52 was presented.

The Officers and Council for 1952–53 were elected.

A vote of thanks was accorded to the retiring Committee Members.

8*th December* 1952

The forty-ninth meeting of THE ACOUSTICS GROUP in the Science Museum, Exhibition Road, London S.W.7. Mr. W. West was in the Chair.

The following paper was read: Measurement of elastic constants of solids, by Mr. G. Bradfield.

11*th December* 1952

The fifty-seventh meeting of THE OPTICAL GROUP in the Physics Department of Imperial College, London S.W.7. Dr. A. C. Menzies was in the Chair.

The following papers were read and discussed: Phase contrast images, by Dr. H. H. Hopkins; A wave-shearing interferometer for testing microscope objectives, by Mr. F. H. Smith; Wave-shearing interferometers with fixed amounts of shear, by Mr. D. Brown. Demonstrations were included with the two latter papers.

18–19*th December* 1952

The Autumn Provincial Meeting was held in the Physical Laboratories, Manchester University. The President, Professor R. Whiddington, was in the Chair. The Meeting was on the following subject: Ionization Loss by Relativistic Particles.

The following papers were read and discussed: Introduction, by J. G. Wilson; Ionization loss by μ-mesons in oxygen; Counter and ionization chamber measurement of the most probable ionization of relativistic particles, by B. T. Price; Average energy expenditure per ion pair in gases, by J. M. Valentine; The grain-density of relativistic particles in photographic plates, by D. H. Perkins; Scintillation experiments on ionization loss in dense media, by B. D. Hyams and M. G. Mylroi; Theory of ionization loss, by M. Schonberg and G. Fowler.

7th January 1953

The seventieth Science Meeting of THE COLOUR GROUP was held at Imperial College, South Kensington, London S.W.7. Dr. T. Vickerstaff was in the Chair.

The following papers were read: A new visual colorimeter, by Prof. H. Cotton; A visula tricolorimeter using the C.I.E. primaries X, Y and Z, by Mr. R. W. G. Hunt; The spectrophotometry of fluorescent pigments, by R. Donaldson.

14*th January* 1953

The fiftieth meeting of THE ACOUSTICS GROUP in the Physics Department of Imperial College, London S.W.7. Mr. W. West was in the Chair.

A talk entitled: Sound absorption in aqueous solutions of electrolytes was given by Dr. K. Tamm and Dr. G. Kurtze.

26*th January* 1953

The fifty-first meeting of THE ACOUSTICS GROUP in Room 4, University College, Malet Place, London W.C.1. Mr. W. West was in the Chair.

The following paper was read: An acoustical and mechanical impedance measuring set, and some results of measurements on human ears and mastoids, by E. Aspinall and J. Y. Morton.

6*th February* 1953

Science Meeting, in the Department of Meteorology, Imperial College, Exhibition Road, London S.W.7. Professor H. S. W. Massey was in the Chair for the Business session, and Mr. J. A. Ratcliffe was in the Chair during the reading of papers.

It was announced that Council had elected the following to Student Membership: Max Adler.

The following were elected to Fellowship, the first thirty being transferred from Student Membership:—James Roy Allen, Harry Bridge, Leonard Denis Brown, Clifford Harry Champness, Max Theodore Christensen, Norman David Cowell, Derek Ian Dawton, Peter Derek Edmonds, John Hollick Frisby, William Alexander Gambling, Bryan Leonard Hart, Graham Robertson Hercus, Charles Henric Johnson, Charles G. Kuper, Alan Bernard Lidiard, James Peter Marsden, Rama Chandra Murty, Uno Opik, Ralph Whaddon Parsons, Edwin Albert Power, George Thomas Pullman, John Samuel Pyett, Alistair Christopher Rose-Innes, Mohamed Salah Eldin Abdel Salam, Sunil Kumar Sen, Ernest Lewis Simmons, Kathleen Stratton, Leonard Kindell Street, Alan Teviotdale, Derek Ross Tibbetts; Samuel Francis Boys, Charles Joseph Braudo, Margaretha Wilhelmina Bruin, David Edmund Caro, Alfred Hans von Engel, George Richard Evans, Syed Mujtaba Karim, Ernst Walter Kellermann, Gething Morgan Lewis, Hugh Christopher Longuet-Higgins, Augusta

Manfredini, Arthur Hamilton McIlraith, Benjamin Terance Price, Pamela Rothwell, Robert Arno Sack, John Ashley Spiers, L. C. Thomson, Vijaychandra Natwarlal Upadhyaya, Albert Meredith Morgan Voyce, Jan Jacobus Went, Erich Peter Wohlfarth, John Edwin Wood.

The following papers were read and discussed : General dynamical features of the upper atmosphere, by P. A. Sheppard ; Effects of topography on the flow atmosphere, by R. S. Scorer; Cosmic rays and state of the atmosphere, by E. P. George; Oscillation and storm phenomena in the ionosphere by W. R. Piggott.

17*th February* 1953

The forty-third Science Meeting of THE LOW TEMPERATURE GROUP was held, in conjunction with the Institute of Refrigeration, in the small Lecture Theatre of the Institution of Mechanical Engineers, Storey's Gate, Westminster, London S.W.1. Sir Charles Darwin was in the Chair.

The meeting took the form of a discussion on Novel refrigeration cycles, and the following speakers opened this discussion: Dr. P. F. Chester on Unattainable states in gas liquefaction, Dr. G. G. Haselden on Refrigeration cycles providing cooling over a temperature range, Mr. M. E. Anderson on Problems encountered in the design of plant for low refrigeration temperatures, Mr. A. G. Monroe on The Hilsch vortex cooler.

18*th February* 1953

The seventy-first meeting of THE COLOUR GROUP was held in the Lecture Theatre of the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. W. S. Stiles was in the Chair.

The following papers were given : The convergence of the tritanopic confusion loci and the deviation of the fundamental response curves, by Dr. L. C. Thomson and Professor W. D. Wright; Some aspects of cone monochromatism, by Mr. R. A. Weale; Defective colour vision and human genetics, by Dr. H. Kalmus.

18*th February* 1953

The fifty-second meeting of THE ACOUSTICS GROUP in the Science Museum, Exhibition Road, London S.W.7. Mr. W. West was in the Chair.

Demonstrations of some old instruments—musical and otherwise—from the acoustics collection in the Science Museum were given by Dr. D. H. Follett.

13*th March* 1953

Science Meeting of THE SOCIETY in the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

The following were elected to Fellowship, the first thirteen named being transferred from Student Membership :—Ronald Drayton Brown, Peter James Campion, Kathleen Marjorie Gratwick, Dorothy Joyce Harrington, Richard Charles Holloway, John Arthur Hulbert, Harvey Douglas Keith, Frank Norwood Lee, Peter Arthur Lee, Max Menachem Mordechai Lipsicas-Lipschitz, Richard Leonard Mason, Leslie Alan Mitchell, Thamotherampillai Thambyahpillai; Abdel-Moneim Awadalla, Robert Bouchez, Edward C. Bullard, Richard Henry Dalitz, Robert Hofstadter, Raghunath Parashuran Thatte, Karl Weissenberg, John William White.

The thirty-seventh (1953) Guthrie Lecture was delivered by Professor Max Born (Edinburgh University) on The conceptual situation in physics and its prospects of development.

19*th March* 1953

The twelfth Annual General Meeting of THE OPTICAL GROUP in the Physics Department, Imperial College, London S.W.7. Dr. A. C. Menzies was in the Chair.

The Minutes of the Eleventh Annual General Meeting were read and confirmed.

The Report of the Committee for 1952–53 was presented.

The Officers and Committee for 1953–54 were elected.

A vote of thanks was accorded to retiring Committee Members.

19*th March* 1953

The fifty-eighth meeting of THE OPTICAL GROUP in the Physics Department of Imperial College, London, S.W.7. Dr. A. C. Menzies was in the Chair.

The following papers, accompanied by demonstrations, were presented by members of the staff of the Hilger Division of Messrs. Hilger and Watts, Ltd : Spectroscopic advances, by Dr. A. C. Menzies; The design of spectrographs, by Mr. J. W. Perry; An aspect of optical design, by Mr. G. E. Fishter; Photocells and their uses, by Mr. E. Schwarz; Interference filters, by Dr. W. Zehden; Electronics applied to optical instruments, by Mr. F. Holmes.

25*th March* 1953

The seventy-second Science Meeting of THE COLOUR GROUP was held in the Physics Department, Imperial College, London S.W.7. Dr. T. Vickerstaff was in the Chair.

The following address was given by the retiring Chairman : Colour problems in the dyeing industry.

26*th March* 1953

The sixth Annual General Meeting of THE ACOUSTICS GROUP in the City and Guilds College, Exhibition Road, London S.W.7. Mr. W. West was in the Chair.

The Minutes of the fifth Annual General Meeting were read and confirmed.

The Report of the Committee for 1952–53 was presented.

Various amendments to the regulations were proposed and approved.

The Officers and Committee for 1953–54 were elected.

A vote of thanks was accorded to the retiring Committee Members.

26*th March* 1953

The fifty-third meeting of THE ACOUSTICS GROUP in the City and Guilds College, London S.W.7. Mr. W. West was in the Chair.

The following paper was read : High speed flight, by Mr. D. W. Holder.

30*th March–1st April* 1953

Spring Provincial Meeting in the Department of Physics, University of Leeds. The President, Professor R. Whiddington, was in the Chair.

The following were elected to Fellowship, the first named being transferred from Student Membership: Donald Percy Dennis Webb; Thomas Henry Bull, Roger Davis Harrison, Sydney Charles Haydon, Harry Rostron Hindley, Urner Liddel, Alan Maxwell.

It was announced that Council had elected the following to Student Membership : Kevin Antony Brennan, David John Byers, William Alfred Delbridge, Grahame John Fraser, John Arthur Gibson, Edwin Lovell Heasell, Ian Simpson Hughes, John Richards Hulston, Peter Charles Lewis, Yung Kuo Lim, George Herbert Mycroft, Edward George Sydney Paige, John Richard Storey, John William Graydon Wignall.

The subject of the meeting was Aspects of solid state physics.

The following papers were read and discussed: Magneto-caloric effects in low and moderate fields, by L. F. Bates; Magneto-caloric effects in high fields, by W. Sucksmith; Variation of magnetization with temperature, by R. S. Tebble; Theory of variation of magnetization in high fields, by K. Hunt; Electron interactions and the magnetic and thermal properties of metals, by E. P. Wohlfarth; Electrical resistance of metals at low temperatures or electronic structure of metals, by P. Rhodes; Magnetic and thermal properties of some alloys, by F. E. Hoare; Dia- and paramagnetism of metals and alloys, by W. E. Elcock; Optical and electrical properties of some phosphors, by J. Ewles; Colour centres in alkali halides, by E. E. Schneider; Ferroelectricity in the perovskite type structures, by L. E. Cross; Theory of ferroelectrics, by A. F. Devonshire.

9*th April* 1953

The forty-fourth Science Meeting of THE LOW TEMPERATURE GROUP was held in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7.

Dr. K. Mendelssohn was in the Chair.

The following paper was read: The use of liquid oxygen in rocket motors, by Mr. S. Allen.

13*th April* 1953

A Fellows' Luncheon took place in the Upper Dining Hall, Imperial College Union, Prince Consort Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

13–17*th April* 1953

The following discourses were delivered during the 37th Physical Society Exhibition of Scientific Instruments and Apparatus at Imperial College, London S.W.7: Seismic study of the ocean basins, by E. C. Bullard (14*th April*); Particles, pellicles; pigments, paints and physics, by Dr. L. A. Jordan (15*th April*); Scintillation counting and its medical applications, by Prof. W. V. Mayneord (16*th April*).

The Prizes and Certificates awarded in the Craftsmanship and Draughtsmanship Competition were presented on 13th April by Prof. R. Whiddington (President, and Chairman of the Exhibition Committee).

14*th May* 1953

The fifty-fourth Science Meeting of THE ACOUSTICS GROUP was held in the Physics Lecture Theatre of Imperial College, London S.W.7. Mr. W. West was in the Chair.

The following paper was read: The relation between the sone and phon scales of loudness, by Mr. D. W. Robinson.

15*th May* 1953

Annual General Meeting in the Large Lecture Theatre of Imperial College, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

Minutes of the previous Annual General Meeting held on 20th May 1952 were read and confirmed.

The Reports of Council and the Honorary Treasurer and the Accounts and Balance Sheet for 1952 were adopted.

Scrutineers were appointed and the Officers and Council for 1953–54 were elected.

The auditors, Messrs. Knox, Cropper and Co. were re-elected.

Votes of thanks were accorded to retiring officers and members of Council, to the officers and members of the committees of the Society, and of the Society's specialist groups; to the Rector and governing body of Imperial College, and to the Heads of the various departments who have given hospitality to the Society at the Annual Exhibition; to the Manageress of the Royal Institution, the Directors of the Science Museum and the various universities at which meetings have been held; and to the Royal Commissioners for the Exhibition of 1851.

15*th May* 1953

Extraordinary General Meeting in the Large Lecture Theatre of Imperial College, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

The following resolutions for the adoption of new Articles of Association were proposed and approved :

1. That the proposed new Articles of Association be finally approved and adopted.
2. That the proposed new Rules of the Society be finally approved and adopted.

15–16*th May* 1953

Science Meeting in the Large Lecture Theatre of Imperial College, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership :

1*st May* 1953: John Michael Gibbons, Richard Frederick Anthony Keating, David Warwick Martin, Arthur Leslie Wallis.

29*th May* 1953 : Thomas Rosslyn Barnett, Raphael Berenbaum, Leon Maissel, Norman Arthur Slark.

The following were elected to Fellowship, the first named being transferred from Student Membership :—Horace Raymond Moore ; Anton Rafael Azzopardi, Neil Brearley, Geoffrey Norman Harding, John Irving, Walter Rule Nimmo, Douglas Harvey Welch.

The meeting was a symposium on Recent research in electron optics. The following papers were read and discussed : The properties of magnetic electron lenses, by G. Leibmann; The magnetic circuit of electron lenses, by T. Mulvey; Design of a large lens for electron scattering experiments, by J. Ellis; Electron lenses with line focus, by O. Klemperer; Possibilities of correction for electrostatic lenses by abandoning rotational symmetry, by J. C. Burfoot; Astigmatism in electron lenses and measures which may be taken for its correction, by G. D. Archard; Image curvature of electron lenses, by B. J. Mayo; Electron optical properties of high voltage electron guns with hairpin tungsten filaments, by M. E. Haine and P. A. Einstein; Emission characteristics of medium and low energy electron guns, by L. Jacob; Particle orbits in the strong focusing synchrotron, by F. K. Goward; Focusing the linear proton accelerator, by J. S. Bell; The deflection of cathode-ray beams, by L. S. Allard; Time lag in scanned images and electron optics, by B. Meltzer; Electron optics in valves, by C. S. Bull; A velocity spectrograph with helical axis, by D. Gabor; Electron optics of spectrometers for absolute measurements of beta line spectra, by R. E. Siday; Axially symmetric magnetic prisms, by J. E. C. Jennings; The production of fine electron foci and their uses, by V. E. Cosslett; Fine electron foci in physics research, by W. Ehrenberg; Electron microscopical methods for direct examination of solid surfaces, by J. W. Menter; Resistor network analogue methods in electron optics, by G. Leibmann; Some prevalent misconceptions in electron optics, by P. A. Sturrock.

20th May 1953

The seventy-third Science Meeting of THE COLOUR GROUP was held at the Lighting Service Bureau, 2 Savoy Hill, London W.C.2. Dr. L. C. Thomson was in the Chair.

The following papers were read : Colour changes and the function of colour memory in the use of chemical indicators, by Dr. J. King; The complementary hues of after-images, by Mr. M. H. Wilson.

21st May 1953

An all-day Meeting was held jointly with the Acoustics Group and the Royal Aeronautical Society on Aeronautical acoustics—in particular jet noise—at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London S.W.1.

The following papers were read : *Engine noise*, by Professor E. J. Richards and Mr. F. B. Greatrex (Chairman, Mr. N. Fleming); *Aircraft noise* : Aerodynamic noise, by Mr. G. M. Lilley, and noise associated with supersonic flight, by Mr. C. H. E. Warren (Chairman, Mr. W. Makinson); *Ground noise* : Air to ground noise, by Mr. N. Fleming, and Ground-to-ground noise, by Mr. J. D. Hayhurst (Chairman, Dr. G. E. Bell).

This was followed by a general discussion.

25th March 1953

The thirteenth Annual General Meeting of THE COLOUR GROUP in the Physics Department, Imperial College, London S.W.7. Dr. T. Vickerstaff was in the Chair.

The Minutes of the Twelfth Annual General Meeting were read and confirmed.

The Report of the Committee for 1952–53 was presented.

The Subscription Rates for overseas members were reduced.

The Subscription Rates for all members residing in Great Britain were raised.

The Officers and Committee for 1953–54 were elected.

A vote of thanks was accorded to retiring Committee Members.

29th May 1953

THE LOW TEMPERATURE GROUP visited the H. H. Wills Physical Laboratory, Bristol. A talk was given on the work of the Laboratory, and was followed by a tour of the Laboratory.

25th June 1953

THE COLOUR GROUP's Summer Meeting was held at the Dyehouse Laboratories of Imperial Chemical Industries Limited, Blackley, Manchester. The programme included a lecture, and a tour of the laboratories to see methods of applying dyes to textiles and other materials, and inspection of a variety of spectrophotometers and other apparatus used in the study of dyeing processes.

26–27th June 1953

The sixtieth Science Meeting of THE OPTICAL GROUP was a Summer meeting at St. John's College, Cambridge.

The following Papers and Demonstrations were given :

Papers : The theory of R.M.S. aberration balancing, by Dr. E. H. Linfoot; The measurement and interpretation of grain in quantitative photography, by Dr. P. B. Fellgett; The influence of the illuminating aperture on optical images, by Dr. H. H. Hopkins; The experimental verification of the basic theory of partial coherence, by Mr. L. F. Baker.

Demonstrations: High resolution spectroscopy of the sun, by Dr. E. von Klüber; A reflecting microscope in use, by Dr. K. J. Olney.

13–14*th July* 1953

Summer Provincial Meeting in the Department of Physics, King's College, Newcastle-upon-Tyne. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership: Brian Shaw Coupe, Peter J. Eccles; and the following to Fellowship, the first three being transferred from Student Membership: Arnold Brendon Clare, Bruce Sween Liley, John Alexander McDonnell; William Julian Kramers, Kurt V. H. Liden, Thomas Mathai, Harry Messel, Stephen Alan Ryce, Andre De Troyer.

The subject of the meeting was Optics and ultrasonics.

The following papers were read and discussed: Measurements with ultrasonics at low temperatures, by A. van Itterbeek; Ultrasonic absorption in some solutions and dispersions, by A. W. Pryor; Ultrasonic absorption in carbon dioxide contained in a narrow tube, by L. E. Lawley; The coefficient of bulk viscosity of fluids, by R. Roscoe; Interferometric measurements of the Lamb shift in hydrogen-like spectra, by C. W. Series; A new test for a reflecting echelon, by T. A. Littlefield; Microwave spectroscopy of the solid state, by E. E. Schneider; A double beam spectrophotometer and its use for measurements on colour centres in alkali halides, by R. V. Hesketh; The influence of configuration interaction on the theoretical values of the polarizability of helium, by J. A. Abbott and H. C. Bolton; New methods in the wave mechanics of molecules, by R. McWeeny.

18*th*–23*rd July* 1953

Conference (sponsored by the Electrical Research Association, The Institute of Physics and the Physical Society) at the Clarendon Laboratory, Oxford. The following took the Chair at various sessions: Dr. T. E. Allibone, Sir John Cockcroft, Dr. C. Sykes, Professor R. Whiddington and Dr. S. Whitehead.

The subject of the conference was Ionization phenomena in discharges, and papers were read under the following headings:

Sparks. (Dr. J. D. Craggs, Professor J. M. Meek, Professor L. H. Fisher, Dr. C. E. R. Bruce.)

High Power Arcs. (Professor B. J. F. Schonland, Professor R. Mannkopff, Professor Lochte-Holtgreven.)

Glow Discharges. (Dr. P. F. Little, Professor K. G. Emeléus, Dr. F. M. Penning, Professor F. Llewellyn Jones.)

High Frequency Discharges. (Dr. W. A. Prowse, Dr. G. Francis, Mr. D. C. Dalton, Professor S. C. Brown.)

Ionization Processes and the Effect of a Magnetic Field. (Mr. J. M. Somerville, Professor G. Weissler, Mr. P. J. Jutsum, Professor J. Clay, Professor G. Valle.)

Geiger Counters. (Mr. R. Loosemore, Dr. L. Colli, Dr. V. Facchini, Mr. P. J. Campion, Dr. A. den Hartog.)

Ultra High Vacua. (Mr. J. Leech, Mr. J. H. Mason, Dr. D. Alpert, Dr. R. L. Fortescue, Dr. S. Wagener.)

General discussion followed and was opened by Professor G. Geballe and Dr. M. Biondi.

ABSTRACTS OF SPECIAL LECTURES

29th (1952) Duddell Medal and Address. Mr. C. Waller.

Some Topics Concerning the Production and Application of Nuclear Emulsions.

Abstract. The photographic emulsion chemist owes much to pure science and, since he cannot pay his debt by considerable contributions to the literature of science, he is fortunate in that his products are tools which are used throughout almost the whole range of scientific reasearch. The techniques whereby the photographic method has attained its present position in nuclear research are the result of the combined effort of nuclear physicist and emulsion maker, the former having made great contributions, even in chemical aspects of the work.

The chemist's part is to devise suitable emulsions that may be produced in high concentration and that will permit the application of the various processes which give it full sensitivity. Production must be possible on quite a large scale, must be reliable, and must give reasonably consistent products; stringent control and testing at all stages of manufacture are essential.

The users of nuclear emulsions, and in particular a few leading university teams, have evolved the methods by which the plates are handled and the results evaluated. Development by ' Temperature Cycle ', and by the low temperature method, have secured uniformity and minimal distortion. Other stages of processing present their own problems through the need to use very thick emulsion layers.

8th (1952) Charles Vernon Boys Prize and Address. Dr. D. Bleaney.

Paramagnetic Resonance at Low Temperatures.

Abstract. When a paramagnetic solid is placed in a steady magnetic field, magnetic dipole transitions between the various energy levels may be induced by application of an alternating magnetic field of suitable frequency. Such transitions are detected by centimetre wave techniques, and used to study the behaviour of the energy levels of the ground state of a paramagnetic ion. In many cases a hyperfine structure is present, from which data concerning the nuclear spin, magnetic moment and electric quadrupole moment can be deduced.

37th (1953) Guthrie Lecture. Professor M. Born.

Published in *Proc. Phys. Soc.* A, 1953, **66**, 501.

6th (1952) Rutherford Lecture. Professor R. E. Peierls.

Published in *Proc. Phys. Soc.* A, 1953, **66**, 313.

8th (1952) Holweck Medal, Prize and Lecture. Mr. J. A. Ratcliffe.

Diffraction of Radio Waves by the Ionosphere.

This lecture was delivered in Paris to the French Physical Society in May 1953.

THE PHYSICAL SOCIETY

REPORT OF COUNCIL FOR THE YEAR ENDED 31ST DECEMBER 1952

During the past year the Council of the Physical Society has put forward suggested changes in the organization of the work of the Society.

An Extraordinary General Meeting held on 20th May 1952 agreed that new Articles of Association should be submitted to the Board of Trade for their approval. These are still under consideration by the Board of Trade.

A new scheme of subscriptions, which was approved in principle in 1951, was completed in detail and adopted at an Extraordinary General Meeting held on 3rd October 1952, and came into operation on 1st January 1953. Under this scheme subscriptions for publications are separated from the subscriptions for membership of the Society, and in addition provision has been made for the purchase of separate copies of papers published in the *Proceedings of the Physical Society*. It is hoped that this will meet the varied needs of our Fellows.

A grant from the Royal Society for the development of the Library which was received early in the year has been used mainly for cataloguing and for increasing the shelf space. A complete card index to both textbooks and periodicals is now available. A number of new books have been ordered, including a selection of books to be purchased under the terms of the Addenbrooke Bequest. Details of the additions to the Library are given in the Society's bulletins to members.

The Library has in the past been the joint responsibility of the Physical Society and the Institute of Physics. The Board of the Institute has now suggested that the Library would be better administered by the Physical Society alone; they have given to the Society their holdings of books and journals at present in the Library, and are continuing to pass on to the Library periodicals received in exchange for the Institute journals. The Council of the Physical Society takes this opportunity of expressing its appreciation to the Board for this most generous gesture.

The Council of the Physical Society wishes to record the cordial thanks of the Society to the various bodies who provided hospitality for the Science Meetings of the Society and its four Groups, and to the Rector and Governing Body of Imperial College and the Heads of the Physics, Chemistry and Mathematics Departments for the privilege of holding the Annual Exhibition in these sections of the College.

MEETINGS

The Annual General Meeting was held at the Royal Institution on 20th May 1952. Reports of the Council and of the Honorary Treasurer and the Annual Accounts for 1951 were adopted.

Professor R. Whiddington, C.B.E., M.A., D.Sc., F.R.S., was elected President and the Officers and Council for 1952–53 were elected. The Presidential Address was delivered by the retiring President, Professor L. F. Bates, Ph.D., D.Sc., F.R.S.

Meetings out of London were held at the H. H. Wills Physical Laboratories, Bristol University, on 24th and 25th March, at the University of Glasgow on 10th and 11th July, and at the Physical Laboratories, Manchester University, on 18th and 19th December.

Eight Science Meetings were held in London during the year. This year, for the first time, the Society published a sessional list of meetings of the Society and its Specialist Groups, and a sessional list of meetings of the Institute of Physics, in accordance with the arrangements with the Institute reported last year.

MEMORIAL LECTURES AND AWARDS

The 36th GUTHRIE LECTURE was delivered by Sir Lawrence Bragg on " X-Ray Analysis of Proteins " at the Royal Institution on 12th March 1952.

The 7th HOLWECK MEDAL of the Société Française de Physique and the HOLWECK PRIZE of the Physical Society were presented to Professor L. Néel at the Royal Institution on 27th May 1952. The Holweck Discourse delivered by Professor Néel was entitled " Antiferromagnétisme et Ferrimagnétisme ".

The 6th RUTHERFORD LECTURE was delivered by Professor R. E. Peierls on " The Atomic Nucleus and Its Constituents " at the Science Museum on 3rd October 1952.

The 29th DUDDELL MEDAL was presented to Mr. C. Waller, who gave a talk on " Some Topics concerning the Production and Application of Nuclear Emulsions ", and the 8th CHARLES VERNON BOYS PRIZE was presented to Dr. B. Bleaney, who gave a talk on " Paramagnetic Resonance at Low Temperatures ". The presentations were made at the Science Museum on 28th November 1952.

EXHIBITION OF SCIENTIFIC INSTRUMENTS AND APPARATUS

The 36th Exhibition was held at Imperial College from 3rd–8th April 1952, and was housed in the Physics and Chemistry Departments in the Main Building and in the Mathematics Department in the Huxley Building. The attendance showed a slight increase over that of the previous year, reaching 13,000, excluding members and exhibitors. The Society was again fortunate in having Mr. A. G. Peacock as Honorary Exhibition Secretary, and is greatly indebted to him for his valuable service in this capacity.

The Craftsmanship and Draughtsmanship Competition was held in March, and entries were displayed at the Exhibition. By courtesy of the Director of the Science Museum winning entries were displayed for a further period in the Science Museum. The total number of entries was 85, and 34 prizes and 50 certificates were awarded, including the 'Silvanus P. Thompson Prize'. The Council records its appreciation of a donation of £50 by the Scientific Instrument Manufacturers' Association from the Bowen Trust Fund. This was applied to the first prizes in four of the classes in the Competition, these prizes being designated 'Bowen Prizes'.

PUBLICATIONS

Proceedings

The valuable service of our referees is again apparent in the statistics for the *Proceedings*: we have achieved a further slight reduction in the average length of papers, and the overall size of the *Proceedings* is somewhat less than in 1951 although the total number of papers published is slightly greater. The average time of publication has improved from 5½ months in 1951 to a little under 5 months in 1952. It is hoped that a further improvement may be possible in the coming year as a result of slight modifications which are to be introduced in the style of printing.

The distribution of papers between Sections A and B is almost equal (113 in A, 117 in B) but Letters to the Editor have numbered 83 in A against 45 in B.

Of 295 papers and 141 letters submitted for publication during the year approximately 70 were returned to authors as unsuitable for publication.

Reports on Progress in Physics

Volume 15, published in the spring of 1952, contains reports on nine subjects in various branches of physics. This Volume contains a cumulative index of authors and contents covering Volumes 1–15. Copies of this cumulative index are also available separately.

The Volume for 1953 will be published during the spring and will again contain nine reports.

A comprehensive cumulative subject index for Volumes 1–10 has been prepared by Mr. M. E. J. Gheury de Bray and will be published during the summer of 1953.

MEMBERSHIP

Roll of Membership		Hon. Fellows	*Ex-officio* Fellows	Fellows		Student Members		Total
Totals, 31st Dec. 1951		7	4		1647		367	2025
Changed during 1952	Newly elected	2		74		83		
	Re-elected			2	122		83	
	Transferred			46		46		
	Deceased			11				
	Resigned			52	65	20	66	
	Lapsed			2				
	Net increase	2			57		17	76
Totals, 31st Dec. 1952		9	4		1704		384	2101

The following is a summary of the membership during the past eight years :

Year	1945	1946	1947	1948	1949	1950	1951	1952
Newly elected Student Members	68	53	102	126	77	103	117	83
Transfers from Student Membership	52	46	33	39	50	52	69	46
Newly elected Fellows	56	139	126	87	71	65	98	76
Net increase in Fellowship	80	165	137	60	48	21	83	57
Net increase in total Membership	75	160	179	120	39	40	89	76

GROUPS

Colour Group

The twelfth Annual General Meeting of the Colour Group was held on Wednesday, 26th March 1952, in the Lecture Room of the Royal Photographic Society. Dr. T. Vickerstaff was re-elected Chairman and Mr. R. W. G. Hunt was elected Honorary Secretary.

Six Science Meetings were held during the year. A summer visit to Cambridge was held on 16th July 1952, and the thanks of the Group were due to Dr. E. N. Wilmer and to Messrs. Pye Limited for making the arrangements. The report of the Sub-Committee on Colour Systems is nearing completion. At the 1952 Exhibition of Scientific Instruments held by the Physical Society the Group provided an exhibit entitled " The Production of Colour by Physical Means ".

Optical Group

The eleventh Annual General Meeting of the Optical Group was held on Thursday, 20th March 1952, in the Physics Department of Imperial College. Dr. A. C. G. Menzies was re-elected as Chairman and Mr. K. J. Habell was re-elected as Honorary Secretary.

Seven Science Meetings were held during 1952.

Low Temperature Group

The seventh Annual General Meeting of the Low Temperature Group was held on Thursday, 4th December 1952, in the Lecture Theatre of the Science Museum. Professor D. M. Newitt was re-elected Chairman, Mr. C. M. Brain was elected Vice-Chairman and Dr. F. Din was elected Honorary Secretary.

Six Science Meetings were held during the year. A meeting was also held on the subject " Some Effects of Low Temperatures on Biological Systems " which was introduced by Dr. J. C. Fidler. The second overseas meeting was early in November, when a party of 24 members visited laboratories and industrial plants in Holland.

Acoustics Group

The fifth Annual General Meeting of the Acoustics Group was held on Thursday, 24th April 1952, in the Henry Jarvis Hall of the Royal Institute of British Architects. Mr. W. West was elected Chairman, Mr. L. C. Pocock was re-elected Vice-Chairman and Mr. A. T. Pickles was elected Vice-Chairman; Mr. W. A. Allen was re-elected Honorary Secretary and Dr. R. W. B. Stephens was elected Honorary Secretary.

Seven Science Meetings were held during the year. Mr. W. West, the Chairman of the Group, continues to be the British Representative on the International Commission on Acoustics, and he also represents the Physical Society on the B.S.I. Acoustics Standards Committee. Mr. G. Bradfield and Dr. E. G. Richardson have been elected Chairman of two sections of the International Meeting on Electro-Acoustics to be held in Holland in June 1953.

Membership

The membership of the four Groups on 31st December 1952 was as follows :

	Colour	Optical	Low Temperature	Acoustics
Members of the Physical Society	123	199	67	97
Members of participating bodies	70	62	45	144
Members of firms subscribing for sustaining membership . .	20	57	—	—
Ex-officio members	—	—	—	2
Other members	26	18	18	43
	239	336	130	286

The following is a summary of the membership of the four Groups during the past eight years :

	1945	1946	1947	1948	1949	1950	1951	1952
Colour Group	178	208	210	223	232	216	219	239
Optical Group	326	381	286	363	356	326	315	336
Low Temperature Group .	54	85	88	90	94	118	124	130
Acoustics Group . . .	—	—	205	265	277	291	260	286

OBITUARY

The Council records with great regret the deaths of the following Fellows : Mr. D. K. Ashpole, Mr. L. Bellingham, Sir William Dampier†, Mr. M. Finn, Mr. E. F. Herroun†, Mr. K. G. Hinton, Professor C. H. Lees*, Mr. W. Lethersich, Dr. S. R. Lewis, Professor F. H. Newman, Mr. G. H. Wingate.

* Member of Council 1910–14, President of the Physical Society 1918–20.
† Life Fellows.

REPRESENTATION ON OTHER BODIES

The Society was represented on various committees as follows :

Board of the Institute of Physics : Dr. A. B. Wood, Dr. C. G. Wynne.

British Committee for Radiological Units : Sir John Cockcroft, Professor H. T. Flint, Mr. D. W. Fry, Mr. W. G. Marley, Professor E. A. Owen.

British Journal of Applied Physics Advisory Committee : Dr. A. G. Gaydon, Dr. W. S. Stiles.

British Standards Institution—Acoustics Standards Committee : Mr. W. West.

British Standards Institution—Colour Terminology Committee : Mr. J. G. Holmes, Professor W. D. Wright.

British Standards Institution—Committee on Electrical Nomenclature and Symbols : Dr. L. Hartshorn.

British Standards Institution—Committee on Units and Technical Data: Professor H. T. Flint.

British Standards Institution—Sub-Committee on Temperature Measurement: Dr. E. Griffiths.

British Standards Institution—Technical Committee on Optical Instruments: Dr. C. G. Wynne.

British Standards Institution—Units and Symbols Standards Committee: Mr. J. H. Awbery.

British Standards Institution—Technical Committee USM/2 Units, Symbols and Abbreviations: Dr. A. C. Stickland.

Chemical Society—Infra-Red Committee: Dr. A. C. G. Menzies.

Faraday Society—Colloid and Biophysics Committee: Professor J. T. Randall.

Geophysical Committee of the Royal Astronomical Society: Dr. J. McG. Bruckshaw.

Joint International Committee on Psychrometric Data: Professor P. A. Sheppard.

Journal of Scientific Instruments Advisory Committee: Mr. T. C. Keeley, Dr. C. G. Wynne.

London Regional Advisory Committee—Applied Physics: Dr. R. W. B. Stephens.

Ministry of Health—Radioactive Substances Advisory Committee: Sir George Thomson.

Ministry of Labour and National Service Committee: The President of the Physical Society.

Royal Society British National Committee for Theoretical and Applied Mechanics: Professor O. A. Saunders.

Royal Society Committee on Symbols: Mr. J. H. Awbery, Professor H. T. Flint.

Royal Society National Committee for Crystallography: Dr. H. Wilman.

Royal Society National Committee for Physics: Professor L. F. Bates, Dr. A. C. G. Menzies, Dr. D. Roaf.

Royal Society National Committee for Scientific Radio: Dr. W. J. G. Beynon, Dr. A. C. B. Lovell.

Royal Society Paul Instrument Fund: Professor R. V. Jones.

Royal Society Scientific Accommodation Committee: The President of the Physical Society.

Science Abstracts Committee of Management: Mr. J. H. Awbery, Dr. A. G. Gaydon, Dr. E. P. George, Dr. D. Roaf.

The Council appreciates the valuable work done by these representatives.

TREASURER'S REPORT ON THE ACCOUNTS OF THE PHYSICAL SOCIETY FOR THE YEAR ENDING 31ST DECEMBER 1952

Income and Expenditure Account

It is not very profitable to make any detailed comments on the Income and Expenditure account for the year 1952 since, as Fellows will be aware, the finances of the Society will have a markedly different structure during the year 1953, and, in consequence, any review of the past year's accounts, and any lessons to be learned from that review, can have little direct impact on the finances of the Society during the present year. Nevertheless, it is fitting that the Treasurer should give an account of his stewardship during the past year. Certain difficulties in connection with the finances of the Physical Society have been brought to the attention of Fellows at the last two or three Annual General Meetings and consideration of these difficulties has led to the evolution of a new financial framework for the Society. In spite of the fact that during the past year a balance of income over expenditure of approximately £2,500 has been achieved, indications can still be found in the accounts now being considered of certain tendencies to instability in the finances of the Society which, it is hoped, will be removed by the new system which has been adopted.

Membership Expenditure

The total income from subscriptions at January 1953 was £5,231 and, once again, this amount has not been sufficient to cover the cost, £5,799, of providing the membership with the normal amenities and privileges. However, the cost of *Science Abstracts*, £2,569, appears as an expense of this magnitude for the last time and the Society should in the future feel able, if it be deemed necessary, to extend the amenities given to its Fellows.

Groups Expenditure

Some comment was made in last year's report on the smallness of the income as compared with expenditure of the Groups. Since that time a most helpful meeting has been held with the Officers of the Groups, and it is only fair to say here that the situation was perhaps not quite so bad as the bald financial facts appeared to indicate. The Groups' activities are very vital to the welfare of the Society and justify considerable expense. The closer liaison which has been established between the Finance Committee of the Society and those responsible for the finances of the Groups should ensure that this expense does not become too considerable.

Publications

It will be noticed that the cost of the Society's publications is just about balanced by the income from sales and publications, with the addition of the generous grant from the Royal Society. It is gratifying to notice that there has been a substantial increase in the sales of the *Proceedings* during the past year and it is hoped that further increases will take place in the future.

Library

The acquisition of a large Council chamber at the Society's Headquarters provided the opportunity for extending the Library facilities of the Society. Consequently, the expenditure under this heading has been much greater than usual, but a large proportion of this expenditure has been met by a grant from the Royal Society. The Council has felt that if the Society has a Library at all it should be a worthy one and, if circumstances permit, the policy of building up the Society's Library will continue.

Exhibition

The Society has benefited to the extent of £4,000 in consequence of the 1952 Exhibition. This very favourable result has not only covered the losses on the membership, Groups and Library expenditures, but has enabled the Society to finish the year with a balance of income over expenditure of £2,573. Providing the annual Exhibition continues its successful career and providing the change in policy in regard to members' subscriptions and publications produces the favourable financial results expected, the Society should be able, in the immediate future, both to undertake once again certain activities which it has been compelled to forgo and to achieve greater financial stability by the building up of reasonable reserves.

Balance Sheet

The total assets of the Society at 31st December 1952 amount to £36,977. The investments are shown at cost (1939 value) at £12,941; the market value of these at the end of 1952 was estimated to be £11,869. Of the value of these investments £3,815 relates to the Special Funds.

General

It is a happy circumstance that the accounts for 1952, being the last based on the subscription system, which has been in force for many years, indicate a relatively favourable financial situation and that the old system has not departed in disgrace. Nevertheless, the reasons for making the changes which have been made were and are very cogent ones and, whilst the changes have been made in some measure as an act of faith, yet the indications are that the Society may well be freed from acute financial anxiety in the immediate years which lie ahead.

A. J. Philpot,
Honorary Treasurer.

16*th April* 1953

DETAILS OF SPECIAL FUNDS, 31st DECEMBER 1952

	As at 31/12/51 Capital			As at 31/12/51 Revenue			Investment Income for year			Expenses for year			As at 31/12/52 Capital			As at 31/12/52 Revenue		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
W. F. Stanley Trust Fund	259	0	0	Transferred to General Fund.														
Duddell Memorial Trust Fund	374	0	0	14	17	1	14	0	0	18	3	0	374	0	0	10	14	1
Charles Chree Medal and Prize Fund	1,866	10	0	5	1	10	68	17	2	–	–	–	1,866	10	0	73	19	0
Charles Vernon Boys Prize Fund	900	0	0	Def. *11*	*3*	*5*	28	6	4	27	7	6	900	0	0	Def. *10*	*4*	*7*
Holweck Prize Fund	250	0	0	–	–	–	7 *126	10 2	0 2	233	12	2	150	0	0	–	–	–
Addenbrooke Bequest	337	0	0	55	1	0	–	–	–	–	–	–	337	0	0	64	13	0
Silvanus P. Thompson Memorial Fund	188	2	4	2	13	8	6	6	2	5	5	0	188	2	4	3	14	10
	£4,174	12	4	£66	10	2	£251	1	10	£284	7	8	£3,815	12	4	£142	16	4

* Grant from Physical Society General Fund.

INCOME AND EXPENDITURE ACCOUN

Year to 31/12/51	EXPENDITURE	£	£
£			
	To MEMBERSHIP EXPENDITURE:		
2,520	"Science Abstracts"	2,569	
580	Agenda Papers, Notices and Expenses of Meetings	504	
53	Honoraria to Special Lecturers ..	58	
53	Audit and Accountancy Fee ..	53	
1,390	Salaries	1,456	
601	Office Expenses	734	
209	Postage	425	
5,406			5,799
	„ GROUPS EXPENDITURE:		
408	Agenda Papers, Notices and Expenses of Meetings, etc.	233	
397	Salaries	416	
131	Office Expenses	160	
74	Postage	73	
1,010			882
	„ PUBLICATIONS:		
8,000	Stock, 1st January 1952	6,800	
10,011	"Proceedings"	11,467	
3,055	"Reports on Progress in Physics" ..	2,624	
115	Special Publications	122	
2,979	Salaries	2,872	
980	Office Expenses	1,112	
1,013	Postage	770	
26,153		25,767	
6,800	*Less:* Stock 31st December 1952 ..	7,100	
19,353			18,667
	„ EXHIBITION:		
3,806	Expenses	4,173	
794	Salaries	833	
261	Office Expenses	319	
25	Postage	108	
4,886			5,433
	„ LIBRARY EXPENDITURE:		
	Expansion	492	
213	Periodicals and Books .. 400		
	Less: Sales thereof .. 158		
		242	
	Salaries	250	
	Office Expenses	83	
			1,067
45	„ GRANTS: Holweck Trust		126
163	„ Balance, being excess of Income over Expenditure, carried to General Fund		2,573
£31,076			£34,547

OR THE YEAR ENDED 31ST DECEMBER 1952

Year to 31/12/51	INCOME	£	£
£			
	By MEMBERS' SUBSCRIPTIONS:		
99	Entrance Fees	81	
4,820	Fellows	4,910	
256	Student Members	240	
5,175			5,231
	,, GROUP SUBSCRIPTIONS:		
33	Colour Group	36	
100	Optical Group	109	
39	Low Temperature Group	64	
117	Acoustics Group	114	
289			323
	,, PUBLICATIONS:		
	"Proceedings":		
200	Volume for preceding year ..	193	
9,469	Volume for current year	10,435	
1,401	Reprints and Sundry Parts ..	1,129	
11,070		11,757	
3,574	"Reports on Progress in Physics" ..	3,744	
734	Advertisement in "Proceedings" ..	484	
559	Special Publications	519	
15,937			16,504
	,, EXHIBITION:		
7,362	Receipts		9,464
	,, GRANTS FROM ROYAL SOCIETY:		
2,000	Publications Grant in respect of 1952	2,000	
—	Library Grant for expansion in respect of 1952	500	
2,000			2,500
	,, GRANTS FROM OTHER BODIES:		
	London Conference–Optical Group		59
303	,, Interest on Investments		435
10	,, Transfer from Life Membership Fund of amounts paid by Fellows now deceased		31
£31,076			£34,547

BALANCE SHEET AS O

1951	LIABILITIES		
£		£	£
16,443	GENERAL FUND:		
	As on 31st December 1951	16,606	
	Add: Transfer–W. F. Stanley Trust Fund..	259	
	Add: Balance of Income and Expenditure		
163	Account	2,573	
16,606			19,438
	APPEAL FUND;		
2,631	As on 31st December 1951	3,390	
759	*Add:* Further Contributions received and due	1,498	
3,390			4,888
	LIFE COMPOSITIONS:		
2,340	As on 31st December 1951	2,330	
	Less: Transfer to Income and Expenditure		
10	Account	31	
2,330			2,299
	SPECIAL FUNDS:		
259	W. F. Stanley Trust Fund	—	
389	Duddell Memorial Trust Fund	385	
1,871	Charles Chree Medal and Prize Fund	1,940	
889	Charles Vernon Boys Prize Fund	889	
250	Holweck Prize Fund	150	
392	Addenbrooke Bequest	402	
191	Silvanus P. Thompson Memorial Fund ..	192	
4,241			3,958
	SUBSCRIPTIONS IN ADVANCE:		
102	Members	1,542	
2,742	Publications	3,601	
2,844			5,143
2,908	SUNDRY CREDITORS		1,251
£32,319			£36,977

(*Signed*) R. WHIDDINGTON, C. G. WYNNE } *Members of Council.*

REPORT OF THE AUDITORS TO THE MEMBERS OF THE PHYSICAL SOCIETY

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Society so far as appears from our examination of those books. We have examined the above Balance Sheet and annexed Income and Expenditure Account, which are in agreement with the books of account. In our opinion and to the best of our information and according to the explanations given us the said accounts give the information required by the Companies Act, 1948, in the manner so required, and the Balance Sheet gives a true and fair view of the state of the Society's affairs as at 31st December 1952, and the Income and Expenditure Account gives a true and fair view of the excess of income over expenditure for the year ended on that date.

Spencer House, South Place,
London, E.C. 2.
10*th February* 1953.

KNOX, CROPPER & CO.,
Chartered Accountants.

1ST DECEMBER 1952

1951	ASSETS	£	£
£	*Quoted Investments:*		
	GENERAL FUND:		
1,438	£2,100 2½% Consols	1,438	
1,636	£1,750 3½% War Stock	1,636	
2,625	£2,725 3% Defence Bonds	2,725	
535	£500 4% Funding Stock	535	
1,533	£2,468 0s. 4d. 3% British Transport Stock 1977/88	1,792	
—	£1,000 3½% Defence Bonds ..	1,000	
7,767			9,126
	Special Funds:		
	W. F. STANLEY TRUST FUND:		
259	£338 19s. 1d. 3% British Transport Stock 1977/88	—	
	DUDDELL MEMORIAL TRUST FUND:		
374	£400 3½% War Stock	374	
	CHARLES CHREE MEDAL AND PRIZE FUND:		
	£784 4% Funding Stock .. 839		
	£1,500 2½% Consols .. 1,027		
1,866		1,866	
	CHARLES VERNON BOYS PRIZE FUND:		
900	£1,132 16s. 10d. 2½% Consols ..	900	
	HOLWECK PRIZE FUND:		
250	£150 3% Defence Bonds	150	
	ADDENBROOKE BEQUEST:		
337	£384 6s. 7d. 2½% Consols	337	
	SILVANUS P. THOMPSON MEMORIAL FUND:		
	£55 3% Defence Bonds 55		
	£133 2s. 4d. 3½% War Stock 133		
188		188	
4,174		3,815	
53	*Cash at Bank: Current Account*	143	
4,227			3,958
	(Investments, 31st December 1952—Cost or 1939 value £12,941—Market value £11,869.)		
62	*Dividends due on Investments*		80
51	*Inland Revenue—Income Tax recoverable*		577
143	*Subscriptions due*		176
1,934	*Sundry Debtors–Publications etc.*	1,711	
—	*Payments in advance* ..	168	
2,190			1,879
3,704	*Stocks—Paper at Cost*	2,262	
6,800	*Publications as valued by Secretary*	7,100	
10,504			9,362
	Cash at Bank:		
1,465	*Current Account, Westminster Bank Ltd.*	4,607	
5,000	*Deposit Account, Westminster Bank Ltd.*	5,000	
1,126	*Deposit Account, Post Office Savings Bank*	1,665	
—	*Deposit Account, Trustee Savings Bank*	504	
7,591			11,776
40	*Cash in Hand*		43
£32,319			£36,977

Printed by Taylor & Francis, Ltd., Red Lion Court, Fleet Street, London, E.C.4